We claim:

1. An electrode for use in batteries, comprising:

an electrically conductive substrate, said substrate containing open pores which are bounded by surfaces, and a layer of a lead-tin containing alloy applied to said surfaces.

2. The electrode according to claim 1, in which said layer is applied by electrodeposition.

3. The electrode to claim 1, in which said layer is applied by vapor deposition.

4. The electrode according to claim 1, in which said substrate contains carbon.

5. The electrode according to claim 4, in which said carbon includes a reticulated vitreous carbon forming said pores.

6. The electrode according to claim 5, in which said vitreous carbon contains between about 20 to about 30 pores per inch of measured length.

7. The electrode according to claim 1, in which said substrate contains aluminum.

8. The electrode according to claim 1, in which said substrate includes a conductive metal formed as a reticulated structure.

9. The electrode according to claim 8, in which said conductive metal contains aluminum.

10. The electrode according to claim 1, in which said electrode includes structure to mount and form a functional electrode in a battery.

11. The electrode according to claim 1, in which the tin content of said alloy includes between about 0.2% to about 3% by weight of said alloy.

12. The electrode according to claim 1, in which the tin content of said alloy includes between about 0.5% to about 2% by weight of said alloy.

13. The electrode according to claim 1, in which the surface area of the pores in said substrate includes between about 500 to 20,000 square meters per cubic meter of substrate.

14. The electrode according to claim 1, in which the dimension of thickness of said alloy includes between about 20 to 2,000 microns.

15. The electrode according to claim 1, in which at least a portion of said surfaces is coated with an electrically conductive lead-containing paste, whereby to form a lead-acid battery plate.

16. The electrode according to claim 1, in which said paste includes lead sulfate and/or lead oxide.

17. An electrode for use in lead-acid batteries, comprising:

a substrate formed as a reticulated rigid structure having pores with substantial surface area, said substrate being electrically conductive, a layer of lead-tin alloy deposited on said structure in intimate conductive contact with the surfaces of said pores, and a layer of a lead-containing paste on said layer of alloy.

18. The electrode according to claim 17, in which said substrate includes aluminum or vitreous carbon.

19. The electrode according to claim 17, in which said lead-tin alloy is a deposition product of electrodeposition or vapor deposition.

20. A battery, comprising:

a housing;

a pair of spaced-apart electrodes, each of the electrodes having an electrically conductive substrate, said substrate containing open pores which are bounded by surfaces, and a layer of a lead-tin containing alloy applied to said surfaces;

an electrolyte contacting said electrodes and bridging the space between them; and

terminal connections to connect said electrodes into a circuit.

21. A method of producing an electrode, comprising

adjusting the substrate to a needed rise;

uniformly coating the substrate with a layer of a lead-tin alloy.

washing the coated substrate; and

drying of the coated substrate.

22. The method of producing an electrode according to claim 21, wherein the uniformly coating the substrate includes applying the coating by electrodeposition on the substrate.

23. The method of producing an electrode according to claim 22, wherein the coating by electrodeposition includes an electrodeposition solution containing $(Sn(BF_4)_2)$, $(Pb(BF_4)_2)$, deionized water, $(H_3BO_3)$, $(HBF_4)$ and gelatin.

24. The method of producing an electrode according to claim 22, wherein the uniformly coating the substrate by electrodeposition includes establishing a cell voltage of 0.3-0.7 V and a temperature of 20°-25° C.

25. The method of producing an electrode according to claim 21, wherein the washing includes washing the coated substrate with a distilled water rinse, an alkaline wash, a distilled water wash, an acetone wash and an acetone dipping.

26. The method of producing an electrode according to claim 21, wherein the drying includes drying the coated substrate in a nitrogen atmosphere.